

Notes on the Ashmead Types of Hawaiian Eucoilidae (Hymenoptera: Cynipoidea)¹

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ABSTRACT

The type specimens of the nine species of Eucoilidae described by W.H. Ashmead in the Fauna Hawaiiensis were studied. This material, presently in the British Museum (Natural History), London, is redescribed, and important morphological characters are illustrated. Lectotypes are designated for four species which Ashmead based on more than one specimen (i.e. *Pilinothrix bicolor*, *Diranchis monticola*, *Diranchis rufipes*, and *Hypodiranchis hawaiiensis*), and for *Trybliographa hawaiiensis*, which was based on a single specimen but for which no specified type specimen was known. In the latter case, a single specimen bearing collection and identification data consistent with that specified in the original description, evidently is the one on which Ashmead based his description. *T. hawaiiensis* is placed in the genus *Hypodiranchis* Ashmead, and *Cothonaspis (Hypodiranchis) pele* Perkins 1910 was found to be a junior synonym. Because the name *Hypodiranchis hawaiiensis* is preoccupied, the next available name, *Hypodiranchis pele* (Perkins), is proposed as a replacement. Ashmead's "male type" of *Diranchis rufipes* was found to be a male of his *Hypodiranchis lanaiensis*. *Hexacola konensis* is placed in *Ganaspis* Förster, and *Pseudeucoila vulgaris* Yoshimoto is placed as a junior synonym of it. *Aglaotoma rufiventris* and *Aglaotoma molokalenis* are placed as new combinations in the genus *Weldia* Yoshimoto. Of Ashmead's nine species, eight are endemic to Hawaii and belong to the *Hypodiranchis* species complex (which includes *Weldia*). *Ganaspis konensis* (Ashmead) appears to be an introduced tropicopolitan species.

The original Hymenoptera Parasitica section of the Fauna Hawaiiensis (Ashmead 1901) contains descriptions of nine species under the subfamily Eucoilinae, a group which is now generally treated as a full family. The type specimens of Ashmead's species were deposited in the British Museum (Natural History) in London, except for one specimen from the type series of *Diranchis monticola* Ashmead which is in the U.S. National Museum in Washington, D.C. Perkins (1910), in his Supplement to the Hymenoptera, described an additional 15 species and three "varieties," of eucoilids, the types of which are deposited in the Bernice P. Bishop Museum, Honolulu. Yoshimoto (1962a) reviewed the Hawaiian eucoilids, but did not see the Ashmead types. Consequently, his placements of Ashmead's species were only tentative.

As part of a general review of the Eucoilidae of Hawaii, I arranged to borrow Ashmead's type specimens from the British Museum. The loan was arranged with the assistance of Dr. Nigel Fergusson, to whom I am greatly indebted for this help. I also borrowed a "paratype" specimen identified by Ashmead as *Diranchis monticola* from the U.S. National Museum.

In order to clarify the status of Ashmead's species, notes and redescrptions based on the type specimens are provided here. The species are treated in the order in which the original descriptions appeared.

1. *Pilinothrix bicolor* Ashmead (Figs. 1A-E).

The type series consists of two specimens, male and female, mounted on a single piece of card which is labeled "Kilauea Vol. (.) X1•96." The information is written directly on the card. Separate labels: "*Pilinothrix bicolor* Ashm (.) ♂ type" and

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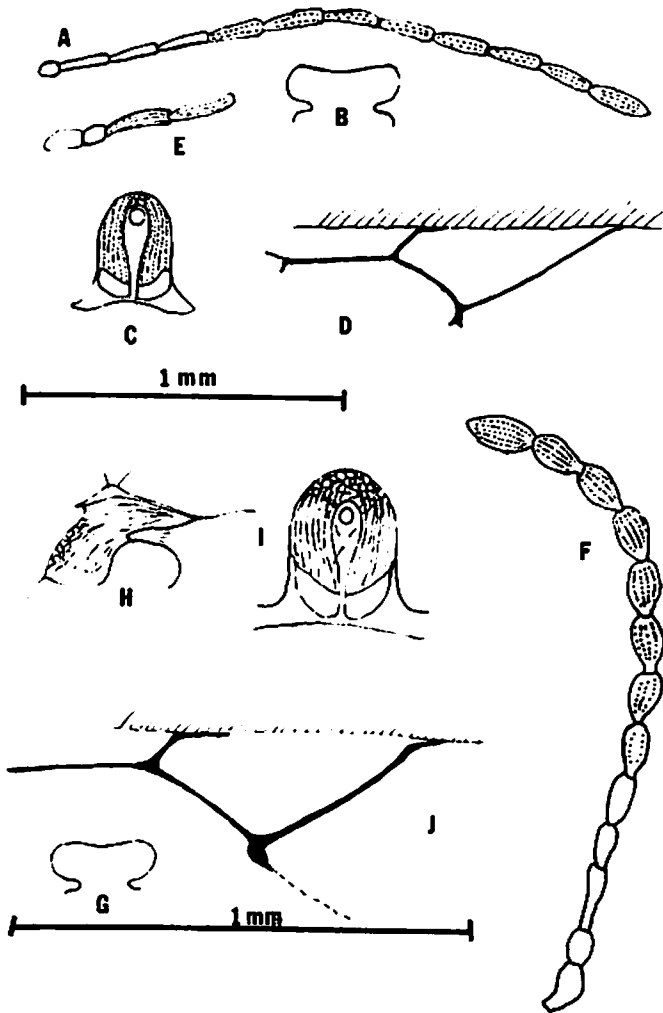


FIGURE 1. A-E, *Pillinothrix bicolor* Ashmead: A-D, lectotype ♀; A, antenna; B, pronotal plate; C, dorsum of scutellum; D, radial cell of forewing; E, allotype, basal segments of antenna. F-J, *Trybliographa hawaiiensis* Ashmead: lectotype ♀; F, antenna; G, pronotal plate; H, scutellum, lateral aspect; I, scutellum, dorsal aspect; J, radial cell of forewing.

"B.M. Type(,) Hym(,) 7.20" are borne on the pin. Since Ashmead's description was based primarily on the female, the female specimen is here designated as the lectotype.

Lectotype female; length 2.5 mm. Head shining black; thorax and gaster mostly castaneous, except pronotum, mesopleurites, apex of propodeum and dorsum of basal half of gaster which are somewhat to much darker; legs yellowish throughout.

Head relatively narrow, a trifle narrower than thorax, about twice as long in dorsal aspect; malar space difficult to measure but length equal to not more than $\frac{1}{2}$ to $\frac{2}{3}$ height of a compound eye. Antenna (Fig. 1A) rather long and slender,

about as long as body, third segment barely longer than fourth, penultimate segment about four times as long as wide; rhinaria discernible on segments 6–13.

Pronotal plate (Fig. 1B) moderately well separated from remainder of pronotum by a fine ridge on posterior and lateral margins, smooth, shining, the posterior margin weakly concave at center; mesal bridge relatively broad; anterior portion of plate finely, transversely striate but without a well-defined transverse ridge. Remainder of pronotum and mesopleurites smooth, shining. Scutellum with disc rounded behind, barely protruding posteriorly, longitudinally strigate; scutellar plate very slender, elongate-spatulate in form (Fig. 1C), slightly arched front to back, extending about $4/5$ length of disc, subapical pit moderately large. Metapleurite with metapleural suture indicated by a fine, weakly developed longitudinal ridge; two incomplete ridges close together just below level of propodeal spiracle, extending about half way to anterior margin; mesal portion of posterior margin depressed, not well differentiated from margin of propodeum.

Forewings rather elongate; radial cell unusually elongate, with outer abscissa of radius very long, mostly open on anterior margin with marginal vein discernible only at base (Fig. 1D); wings densely ciliate.

Propodeum with a pair of dorsolateral longitudinal carinae with a depressed flat area between them (as in all of the *Hypodiranchis* group of endemic Hawaiian Eucolidae). Ashmead's description is in error in stating that the "metathorax" (=propodeum) "has a median carina."

Gaster strongly compressed laterally, relatively large, longer than head plus thorax, basal segment (petiole) with strong longitudinal ridging (appearing fluted) of nearly uniform diameter (i.e. not strongly expanded posteriorly). Basal hair band of second tergite sparse, but entire dorsally, the roughened seta-bearing area behind anterior band wider than length of a band seta dorsally, and considerably wider than this ventrally, band setae erect with apices curving posteriorly.

Allolectotype male (on same card as lectotype female); length 2.0 mm. Body entirely dark. Antennae very long (ca. 1.5 times as long as body), third segment slightly longer than fourth, slightly curved (Fig. 1E). Pronotal plate finely, transversely striate on anterior portion. Metathoracic ridge below propodeal spiracle more strongly developed than female, double basally as in female. Gaster not longer than head plus thorax.

The color pattern of the female, the broad pronotal plate, elongate antennae, large compressed gaster, and the elongate radial cell of the forewing all serve to distinguish this species from other described forms. No females identical to the lectotype are available, although a few are at hand from other localities which appear to represent related, presumably undescribed species. Most similar is a female specimen from "Ainahou Valley." The island is not specified, but it is presumably from Maui Island. There is an Ainahou Valley on eastern Maui from which collections of insects and other arthropods were made during 1977. This specimen has the scutellar plate of a somewhat different shape than the lectotype. Another similar female from Molokai has the scutellar disc extended behind as a shallow conical projection over base of propodeum, and appears to represent another related undescribed species. A single male from Glenwood, Hawaii, 111•2•1919, O.H. Swezey collector, is very similar to the allolectotype, although slightly smaller. Another similar male from Oahu differs in taxonomic details and probably represents an additional related species.

Yoshimoto (1962a) assigned this species to *Hypodiranchis* Ashmead.

II. *Trybliographa hawaiiensis* Ashmead (Figs. 1F–J).

The type collection of the British Museum contains no specimens bearing this name. However, a single female labeled as *T. hawaiiensis* and bearing data consistent with that cited by Ashmead, was found in the general collection of the Museum by Dr. Goran Nördlander of the Swedish Institute of Agricultural Science. Because Ashmead's description was based upon a single female, and as no others with similar collection data are known, this specimen is believed to be the true type of *T. hawaiiensis*. This specimen is redescribed below and is hereby designated as the lectotype of *Trybliographa hawaiiensis*. The card-mounted specimen bears the following labels: "Hilo, Hawaii 2,000 ft.(.) 1•1896"; "Sandwich Is. 1912–215" and "*Trybliographa hawaiiensis* Ashm." The specimen lacks labels identifying R.C.L. Perkins as the collector, or the host as "from decaying stem of a *Lobelia* tree" which are specified in the original description.

Lectotype female; length 2.1 mm. Body entirely black; legs including coxae, light reddish brown. Head not wider than thorax, a bit more than one-half as long as wide in dorsal aspect (ca. 7:11, but difficult to measure exactly because one side is obscured by glue); length of malar space (measured along subocular suture) equal to about one-half height of compound eye. Antennae relatively short, approximately $\frac{3}{4}$ as long as body, segment 3 longest, $\frac{1}{3}$ longer than 4 (4:3), segments 4–12 gradually wider toward apex; rhinaria discernible on segments 6–13 (Fig. 1F). Pronotal plate (Fig. 1G) of normal form, moderately well separated by a fine ridge on posterior and lateral margins, posterior margin nearly straight, anterior section of plate without distinct transverse ridging. Pronotum and mesopleurites without striation. Metapleurite with a well-defined longitudinal ridge extending slightly upward from just below propodeal spiracle about one-half distance to anterior margin, becoming evanescent but faintly indicated thereafter; mesal portion of posterior margin depressed, not clearly differentiated from margins of propodeum. Propodeum of the usual bicarinate form. Scutellum in lateral aspect distinctly humped, triangular in outline without any posterior prolongation or overhang, its slope appearing continuous with that of propodeum (Fig. 1H); disc coarsely strigate, with 4 or 5 more or less longitudinal ridges on each side, these turned downward posteriorly; posterior ridges anastomosing on posterior part of disc; disc with a well-defined row of setae on each side. Scutellar plate (Figs. 1H, I) very narrow, with an elongate anterior neck, distinctly humped before pit, extending about $\frac{3}{4}$ length of disc, posterior part downturned, forming a ledge protruding over disc posteriorly, with two setae near apex of hump and one anteriorly; pit of moderate size, circular in outline. Forewings densely setose, faintly brownish tinged; veins brown. Radial cell definitely open on anterior margin for about $\frac{3}{4}$ of its length (Fig. 1J). Gaster about as long as head plus thorax, of normal width; basal hair band of second tergite complete dorsally, two or three hairs wide, the individual setae set close together but all erect, with tips curving posteriorly, so that band does not appear woolly.

The original description of *T. hawaiiensis* refers to a "sharp carina" down the middle of the "metathorax" (=propodeum). This error probably was due to the fact that the specimen is card-mounted on its side so that the carina on the uppermost (right) side is clearly evident, but the left carina is almost completely obscured by the left forewing. Ashmead's statement that the marginal cell is completely closed is clearly incorrect and I cannot explain this discrepancy.

The lectotype specimen of *T. hawaiiensis* was compared with the type specimens of two similar forms, *Cothonaspis (Hypodiranchis) pele* Perkins 1910, and *Hypodiranchis globicornis* Yoshimoto 1962a, both based on specimens from Hawaii

Island. The type of *C. pele* was found to be essentially similar to that of *T. hawaiiensis* in nearly all details. The scutellar plate of the *C. pele* type is not quite so acutely humped just before the pit as is that of *hawaiiensis*, although it is distinctly downturned at this point. In the type of *pele* antennal segment 3 is only slightly longer than 4 (7:6) and the basal closure of the marginal cell of the forewing is somewhat greater than in the type of *hawaiiensis*. These minor differences seem to be within the limits of expected intraspecific variation in this group. *Cothonaspis* (*Hypodiranchis*) *pele* Perkins is therefore a junior synonym of *Trybliographa hawaiiensis* Ashmead, NEW SYNONYMY.

The type of *Hypodiranchis globicornis* Yoshimoto is similar, but the differences observed are more pronounced than those observed in the type of *pele*, and until the study of additional specimens indicates otherwise, it is considered to be distinct.

On the basis of the lectotype specimen, *Trybliographa hawaiiensis* clearly is a member of the endemic Hawaiian *Hypodiranchis* complex. However, its formal assignment to that genus requires the use of the next available name, as the name *Hypodiranchis hawaiiensis* is preoccupied by the type species of that genus, *H. hawaiiensis* Ashmead 1910, (redescribed in this paper). Therefore, the name *Hypodiranchis pele* (Perkins) is proposed here for the species originally described as *Trybliographa hawaiiensis* Ashmead.

III. *Aglaotoma rufiventris* Ashmead (Figs. 2A–D).

The single female type bears a collection data label reading "Kilauea Hawaii(,) Perkins(,) VII•1895"; and two additional labels; "B.M. Type(,) Hym(,) 7•19" and "Aglaotoma rufiventris Ashm(,) ♀ type." The specimen lacks the gaster, and the right antenna is missing segments 9–13. The species was based on a single female specimen which, therefore, is unquestionably the holotype.

Holotype female; length of forewing 2.5 mm; the length of specimen as stated in original description was 2.5 mm. Head and thorax black; legs quite pale yellowish brown. Head in dorsal aspect a trifle wider than thorax, slightly less than twice as wide as long; length of malar space, measured along subocular suture, equal to about $\frac{1}{2}$ height of compound eye; antennae (Fig. 2A) moderately long and slender, about 2.6 mm long overall; segment 3 distinctly shorter than 4 (3:4), segments 4–10 subequal in length, 11–12 slightly shorter, 13 about 1.3 times as long as 12; rhinaria present on segments 4–13.

Pronotal plate moderately well differentiated posteriorly and laterally by fine ridge; posterior margin moderately concave at center, posterior portion of plate smooth, with a row of setae just in front of posterior margin; mesal bridge quite narrow (Fig. 2B); anterior portion of plate without discernible transverse ridging. Pronotum smooth laterally. Mesopleurites smooth except for 2 or 3 fine smooth ridges in bottom of subalar groove, and short longitudinal striations on anterior margin just above mesopleural suture. Scutellum rounded behind, not appreciably protruding posteriorly; disc moderately strongly sculptured with irregular ridging which extends downward from overhanging edge of scutellar plate, some ridges, particularly on posterior part of disc, anastomosing; scutellar plate with an arched, declivous "neck" anteriorly, posterior $\frac{2}{3}$ nearly level, slightly arched front to back, center not strongly raised, extending for about $\frac{4}{5}$ length of disc, lateral margins free, distinctly overhanging the disc; pit quite large with anterior margin transverse (Fig. 2C). Forewings very slightly brownish tinged, radial cell distinctly closed on anterior margin, a bit more than two times as long as wide (Fig. 2D).

There are some nomenclatorial problems connected with this species. Dalla Torre and Kieffer (1910) placed it in *Eucoilia* Westwood and proposed a new

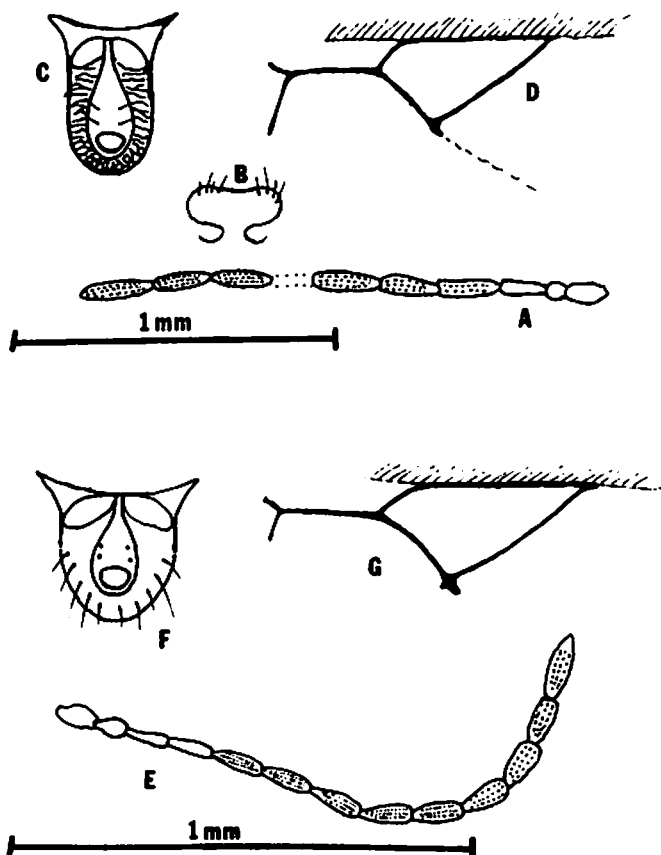


FIGURE 2. A-D, *Agalactotoma rufiventris* Ashmead: holotype ♀. A, antenna (segments 7-10 omitted); B, pronotal plate; C, dorsum of scutellum; D, radial cell of forewing. E-G, *Agalactotoma molokaiensis* Ashmead: topotype ♀; E, antenna; F, dorsum of scutellum; G, radial cell of forewing.

name, *E. (Psichacra) subrufa* because *E. rufiventris* was preoccupied. Yoshimoto (1962a) assigned the species to *Pseudeucoila* Ashmead using the name *rufiventris* in his species key, but citing it as *subrufa* in his text treatment. *Pseudeucoila* is now considered to be synonym of *Trybliographa* Förster (Nördlander 1981), which is not closely related to the Hawaiian group to which *rufiventris* belongs. The species appears to be allied to those which Yoshimoto placed in his genus *Weldia* and the NEW COMBINATION, *Weldia rufiventris* (Ashmead), is here proposed for it.

I have seen no other specimens which exactly match the holotype of *rufiventris*, although there are several from Hawaii Island which are quite similar and which a more detailed study may show to be conspecific.

IV. *Agalactotoma molokaiensis* Ashmead (Figs. 2E-G).

The single card-mounted female type bears a collection data label which reads "Molokai Mts., 4,000 ft., 27°11'1893(,) Perkins," and two additional labels: "B.M. Type(,) Hym(,) 7·18" and "*Agalactotoma molokaiensis* Ashm(,) ♀ type." The

specimen has the head imbedded in the mounting glue, making details difficult or impossible to see. Both antennae are broken off after the eighth segment. As the species was based upon a single female, this specimen is unquestionably the holotype.

Holotype female. Length 1.4 mm; body black, legs mostly dark brown. Head slightly wider than thorax, in dorsal aspect about twice as wide as long. Antennae with basal segments in mounting glue but segments 3 and 4 apparently subequal. Pronotal plate of normal form, posterior and lateral margins defined by a fine ridge, posterior portion smooth, with a row of setae just in front of posterior margin. Lateral portion of pronotum and mesopleurites smooth, shining. Scutellum hump-like, rounded behind, not protruding posteriorly; disc largely smooth, faintly indistinctly roughened with what appear to be tiny shallow longitudinal wrinkles; scutellar plate extending a little more than one-half distance to apex of disc, moderately broad, with a rather large pit. Gaster with basal hair ring of second tergite dorsally entire, apparently formed of a single continuous ring of closely set erect setae with apices bending posteriorly; but with a roughened area behind this which bears a few fine setae; this area about one seta length wide dorsally, wider laterally.

There are several specimens from the mountains of eastern Molokai, in the Bishop Museum and University of Hawaii collections, which appear essentially identical with the holotype of *A. molokaiensis*. Illustrations for this species (Fig. 2) were made from one of these. *Eucoila (Psichacra) oreias* Perkins is very close, and further study may show that it is synonymous with *molokaiensis*. Both *molokaiensis* and *oreias* apparently belong with the group of species which Yoshimoto (1962a) assigned to his genus *Weldia*, and a **NEW COMBINATION**, *Weldia molokaiensis* (Ashmead), is here proposed for it.

V. *Diranchis monticola* Ashmead (Fig. 3A-E).

The British Museum type material of this species consists of two female specimens mounted together on a single card. This bears a data label which reads "Molokai Mts.(,) 4,000 ft., Perkins,(,) 15•VI•1893" and two additional labels; "B.M. Type,(,) Hym,(,) 7•16" and "*Diranchis monticola* Ashm,(,) ♀ type." The two specimens are clearly conspecific; however, the right hand specimen (with the card facing forward from the pin) which is slightly larger, appears to conform most nearly to Ashmead's description, and is here designated as the lectotype.

Lectotype female; length 2.6 mm. Body black; legs mostly dark brown to reddish brown. Head not wider than thorax, in dorsal aspect a bit less than twice as wide as long; eyes relatively small, malar space (measured on subocular suture) nearly as long as height of compound eye. Antennae relatively short, distinctly shorter than length of body, segments 3-12 gradually wider toward apex, 12 less than twice as long as wide, segment 3 distinctly longer than 4, rhinaria present on segments 6-13 (Fig. 3A).

Pronotal plate (Fig. 3B) with posterior margin straight, defined by fine lateral ridges, posterior marginal ridge evanescent at center; posterior section of plate rather narrow transversely; mesal bridge not particularly broad, anterior section of plate with a well-defined, transverse, arcuate ridge across base of bridge. Lateral parts of pronotum and mesopleurites smooth. Scutellum with disc strongly developed, conically prolonged behind, longitudinally strigate laterally, reticulate posteriorly; scutellar plate large, smoothly arched from base, without a distinct narrow basal "neck," slightly convex toward middle from sides, but not turned downward toward apex, slightly overhanging disc laterally; pit moderately large, circular (Fig. 3C). Metapleurites with a single ridge originating below propodeal spiracle extending a trifle

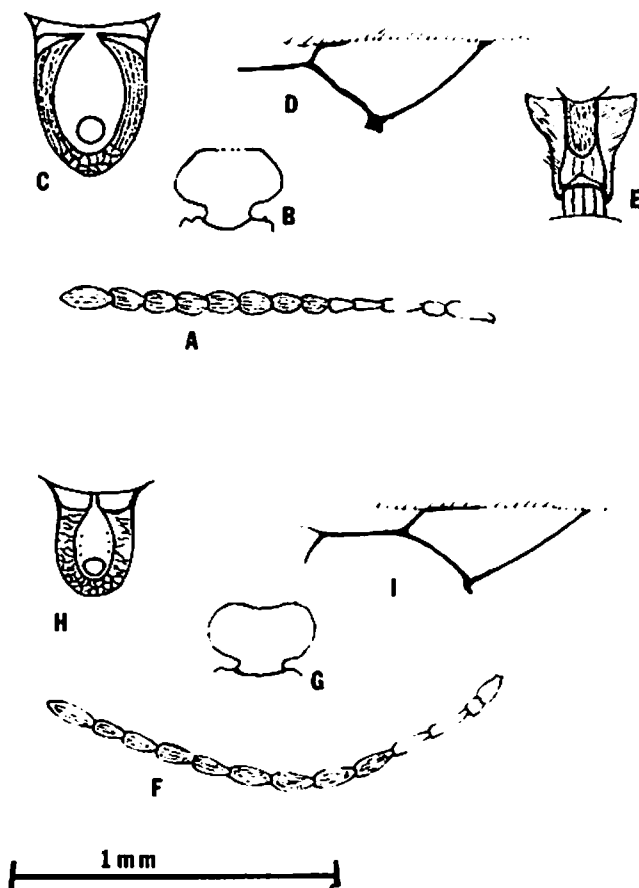


FIGURE 3. A-E, *Diranchis monticola* Ashmead: lectotype ♀; A, antenna; B, pronotal plate; C, dorsum of scutellum; D, radial cell of forewing; E, dorsum of propodeum. F-I, *Diranchis rufipes* Ashmead: lectotype ♀; F, antenna; G, pronotal plate; H, dorsum of scutellum; I, radial cell of forewing.

less than halfway to anterior margin, otherwise smooth. Forewing with slight brownish tinge, radial cell (Fig. 3D) mostly open along anterior margin. Propodeum bicarinate (Fig. 3E). Gaster relatively short and broad, no longer than head plus thorax, not unusually compressed laterally, basal hair band of second tergite strongly developed, entire above, appearing thick and bushy.

The paralectotype mounted with the lectotype is a trifle smaller and has the marginal vein of the forewing more strongly developed, extending for nearly one-half the length of the cell. Otherwise it is essentially similar.

Yoshimoto (1962a) referred to a "paratype" specimen of *D. monticola* in the U.S. National Museum, from Kauai Island, which he examined. This female specimen (USNM #6969) was not mentioned in Ashmead's description. Through the kindness of Dr. Arnold Menke, I was able to borrow the specimen for comparison with the lectotype described above. The specimen bears a data label which reads: "Mts. Waimea(,) Kauai 4,000 ft.(,) Perkins(,) VI•1894." Although this specimen is

generally similar to the lectotype, I believe that there are sufficient structural differences to warrant its separation. For example, the pronotal plate is of quite a different form, and the gaster is relatively larger and much more compressed laterally. This species will be described as new in a later paper.

Yoshimoto (1962a) placed *D. monticola* in *Hypodiranchis* Ashmead. It appears to be closely related to several other relatively large species with posteriorly prolonged scutella which have been assigned by Yoshimoto to *Hypodiranchis*; e.g. *Cothonaspis strigosa* Perkins, *C. intermedia* Perkins and *C. tantali* Perkins.

VI. *Diranchis rufipes* Ashmead (Figs. 3F–I).

The British Museum type collection contains two specimens, male and female, representing two distinctly different species, which bear this name. In as much as Ashmead described the female specimen first, and in greater detail than the male, that specimen is here designated the lectotype. The lectotype specimen bears a collection data label which reads, "Lanai(,) Halepaakai(,) VI•1894(,) Perkins" and two additional labels, "B.M. Type(,) Hym(,) 7•17" and "*Diranchis rufipes* Ashm(,) ♀ type."

Lectotype female; length 2.0 mm. Body black; legs light yellowish brown, hind coxae and femora very pale brown. Head largely buried in glue but apparently not wider than thorax, in dorsal aspect slightly less than twice as wide as long; malar space length not measured, but estimated to be greater than one-half height of compound eye, eyes appearing relatively small. Antenna of moderate length, about $\frac{2}{3}$ as long as body, segment 3 slightly longer than 4, segments 5–10 subequal in length and width, 11 and 12 a trifle shorter; rhinaria present on segments 5–13 (Fig. 3F).

Pronotal plate defined on posterior and lateral margins by a fine ridge, posterior margin slightly concave at center, posterior portion smooth, with a few very small setae, mesal bridge of average width, anterior portion of plate with a transverse ridge at base of bridge and fine transverse striations anteriorly (Fig. 3G). Pronotum and mesopleurites largely smooth, with a few weak longitudinal ridges in subalar depression. Scutellum rounded behind, not particularly protuberant; disc quite strongly reticulate-rugose behind, without longitudinal striations; scutellar plate moderately broad, slightly convex, with the apex, bearing pit, slightly downturned, extending about $\frac{3}{5}$ length of disc, with the edge barely overhanging disc laterally; pit moderately large, circular (Fig. 3H). Metapleurite with a double ridge extending from below propodeal spiracle diagonally forward $\frac{2}{3}$ of distance to anterior margin. Forewing faintly brownish tinged, radial cell distinctly open on anterior margin for about $\frac{2}{3}$ of its length (Fig. 3I).

Gaster about as long as thorax, not unusually compressed laterally; basal hair ring of second tergite complete dorsally, sparse, setae erect with apices curving posteriorly; ring apparently one seta wide throughout, but with a narrow roughened area behind hair ring, about as wide as one seta length.

No similar specimens from Lanai Island are known. However, a female from Hawaii (Olaa 23 mi, W.M. Giffard, VIII•9•1918) is very similar but slightly smaller (1.8 mm long), and lacks the faint mesopleural striations noted in the lectotype.

The specimen which Ashmead described as the male of *D. rufipes* is, in fact, the male of *Hypodiranchis lanaiensis* Ashmead, and is discussed under the latter.

VII. *Hypodiranchis hawaiiensis* Ashmead (Figs. 4A–F).

The original description states that two female specimens were studied. However, only one is present in the British Museum type collection. It bears a data label which reads: "Kona(,) 4,000 ft.(,) Perkins(,) VIII•1892" and two additional labels;

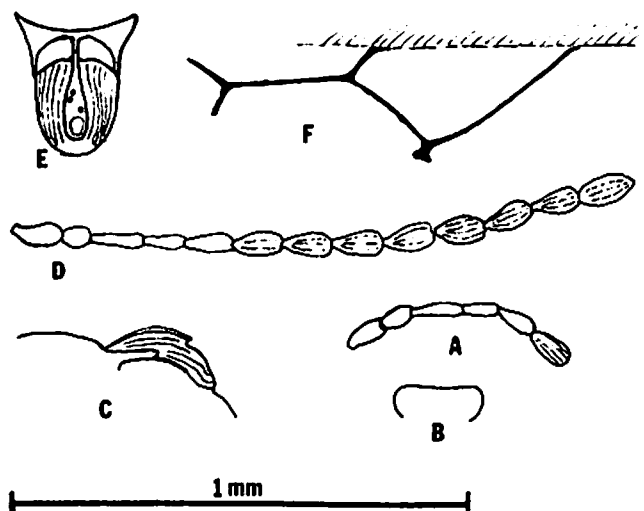


FIGURE 4. *Hypodiranchis hawaiiensis* Ashmead: A-C, lectotype ♀; A, basal segments of antenna; B, pronotal plate; C, lateral aspect of scutellum; D-F, ♀ from Kipuka Puauulu; D, antenna; E, dorsum of scutellum; F, radial cell of forewing.

"B.M. Type(,) Hym(,) 7•14" and "*Hypodiranchis hawaiiensis* Ashm(,) ♀ type." This specimen is here designated as the lectotype. The specimen is in rather poor condition; both forewings are missing, and the left (uppermost) antenna is broken off after the fourth segment, the broken portion being stuck to the right antenna. The outer segments of the two antennae appear to be stuck to the right side of the thorax, which is glued to the card mount, so that the outermost segments of both antennae are obscured from view. The gaster is detached from the thorax and glued separately to the card mount.

Lectotype female; length about 1.7 mm. Head and body shining black; antennae dark brown, legs pale brownish, hind coxae darker basally. Head slightly narrower than thorax, in dorsal aspect slightly less than twice as wide as long (15:8); length of malar space measured on subocular suture, equal to about one-half height of compound eye. Antennae with segment three definitely longer than 4 (4:3), segment 6 distinctly broader than 5, visible outer segments subequal to 6 (Fig. 4A), segment 12 and 13 not visible; rhinaria discernible on visible segments from 6 outward; total length of antenna, from original description, almost equal to length of body.

Pronotal plate of normal form, posterior and lateral margins moderately well defined by fine ridge, posterior margin slightly concave at center (Fig. 4B); posterior section of plate smooth, shining, anterior portion with weakly indicated transverse striations, mesal bridge of average width. Lateral parts of pronotum, propleurites and mesopleurites smooth, shining; metapleurite covered by transparent glue so that ridges not discernible. Mesoscutum smooth, shining, notaulices not evident. Scutellum in lateral aspect moderately well developed, not strongly humped, not protruding posteriorly (Fig. 4C); disc rounded behind, rather weakly longitudinal strigate, with about 6 widely separated low, smooth ridges on each side; lateral bars with inner margin nearly straight, weakly finely longitudinally striate at base; scutellar plate narrowly elongate, at least four times as long as maximum width, extending $\frac{3}{4}$

of distance to apex of disc, sides nearly parallel on central portion, margins overhanging disc slightly at sides and behind; smoothly, shallowly arched from base of neck to apex, otherwise flat (i.e. center not raised relative to sides); pit difficult to see but apparently small, circular (Fig. 4E). Propodeum with a strong pair of dorso-lateral longitudinal carinae.

Gaster about as long as head and thorax combined, not unusually compressed; basal hair ring of second tergite complete dorsally, two or three setae wide, not woolly, setae erect with apices bending posteriorly, some smaller finer setae present in narrow roughened area behind anterior band, this region wider ventrally than dorsally; with a sparse row of six or seven setae on each side further back. Petiole segment of detached gaster with normally visible posterior portion fluted, of nearly uniform width; wider, non-fluted anterior portion normally obscured within apex of propodeum.

Two female specimens in the University of Hawaii collection bearing the following collection data: "Hawaii I.(.) Kipuka Puauulu (Hawaii Volcanos National Park)(.) 1140 m., 24•VI•1966(,) J.W. Beardsley" agree closely with the lectotype of *H. hawaiiensis* in all observable details. One of these has been used to illustrate morphological details which were difficult or impossible to determine from the lectotype. In these specimens the overall length of the antenna (Fig. 4D) is slightly shorter than the body length; the forewings are very faintly brownish tinged with brown veins and the radial cell (Fig. 4F) is distinctly open along most of the anterior margin. The metapleurites (observed in the lectotype) have an upwardly diagonal longitudinal ridge extending from below the propodeal spiracle which becomes evanescent about half way to the anterior margin. The posterior margin of the metapleurite is moderately depressed mesally, the margin in this area being obscured by a patch of long setae which is contiguous with setae on lateral part of propodeum. This patch of setae extends to the lower margin of the metapleurite, behind a small, flange like projection just above the base of the hind coxa. In these specimens the mesocoxae possess the small dorsolateral patch of fine setae, and the hind coxae have the posterior band of setae, which Nördlander (1982) considers to be plesiomorphic characters in the *Ganaspis* group of genera. The mesocoxal setal patch is not readily discernible in the lectotype because the coxae are partly covered with transparent glue.

A single male specimen labeled: "Bird Park (=Kipuka Puauulu) Kilauea, Hawaii(,) 22•VIII•1958(,) J.W. Beardsley collector" seems to be conspecific, agreeing in all essential details except for sexual differences. The antennae of this specimen have segment 3 slightly shorter than 4, weakly curved and flattened on the outer face; segment 4 is unmodified.

Hypodiranchis hawaiiensis is the type species of *Hypodiranchis*, an apparently endemic Hawaiian complex which contains a large number of poorly understood species. Three of the genera described by Yoshimoto (1962a) from Hawaii; *Lisporhyus*, *Pseudodiranchis* and *Weldia*, all of which appear doubtfully distinct from *Hypodiranchis*, belong with this complex, as do a number of Hawaiian species placed by him in *Pseudeucoila* Ashmead. It is planned to review these groups in future papers. *Hypodiranchis* and its allies in Hawaii appear to belong to the *Ganaspis* group of genera, as defined by Nördlander (1982).

VIII. *Hypodiranchis lanaiensis* Ashmead (Figs. 5A–E).

The original description refers to a single female specimen. The specimen bears labels as follows: "Lanai(,) 2,000 ft.(,) Perkins. 12•1893," "B.M. Type Hym 7•15" and "Hypodiranchis lanaiensis Ashm(,) ♀ type." The specimen is mounted through

the mesothorax with a minuten nadeln which is heavily coated with dark crystalization "wiskers." The right antenna is broken off after the sixth segment.

Holotype female; length 2.5 mm. Body very dark brown to black, legs, mandibles and basal 5 segments of antenna brownish yellow, outer antennal segments gradually darker. Wings hyaline, not brownish tinged, veins pale brownish yellow.

Head a trifle wider than thorax, slightly more than one-half as long as wide (6:10); length of malar space equal to less than one-half height of compound eye (2:5); head in frontal view subtriangular in outline, broadest near top of eyes. Antennae (Fig. 5A) as long as body, all flagellar segments elongate, segments 3 and 4 subequal; rhinaria clearly discernible on segments 6-13, weakly developed on segments 4 and 5.

Pronotal plate (Fig. 5B) with posterior and lateral margins fairly well-defined by fine ridge, posterior margin weakly concave at center, anterior portion apparently not transversely striate. Pronotum laterally with some weakly developed smooth ridges parallel to lower margin on posterior portion. Mesopleuron with strongly developed mesopleural suture forming a raised ridge, with a parallel ridge just above, and several very faint additional parallel ridges indicated above and below; lower margin of mesopleurite also forming a distinct ridge, with a parallel ridge just

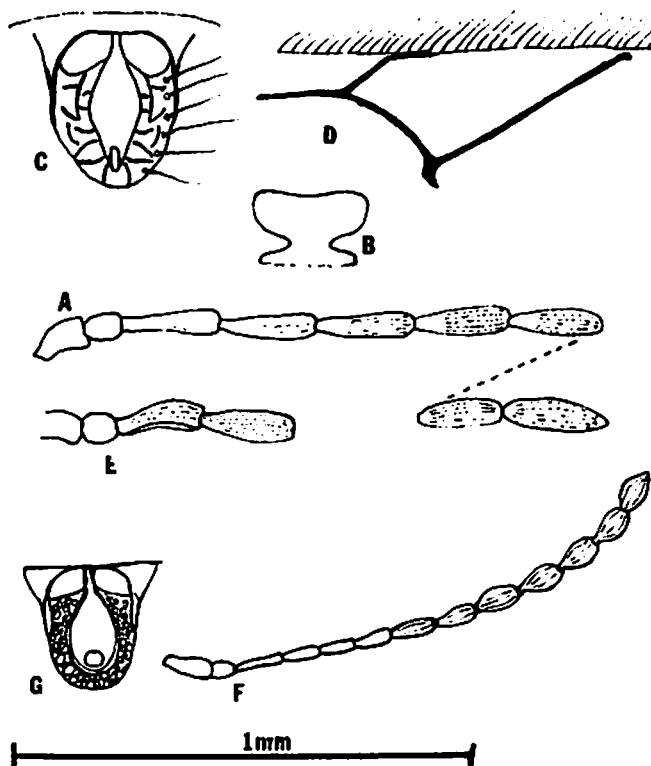


FIGURE 5. A-E, *Hypodiranchis lanaiensis* Ashmead: A-D, holotype ♀; A, antenna (segments 8-11 omitted); B, pronotal plate; C, dorsum of scutellum; D, radial cell of forewing; E, basal segments of antenna, ♂ *H. lanaiensis* specimen previously misidentified as "♂ type" of *Diranchis rufipes*. F-G, *Hexaplasta konensis* Ashmead: Holotype ♀; F, antenna; G, dorsum of scutellum.

above. Metapleurite smooth, with ridge just below propodeal spiracle extending to near anterior margin, posterior margin depressed medially.

Mesonotum distinctly less strongly humped than in typical Eucoilidae. Scutellum with disc rounded behind, barely protruding over base of propodeum, coarsely reticulate with a broken network of strong ridges behind and laterally, the ridging less strongly indicated on anterior portion of sides; lateral bars weakly longitudinally striate at base, extending about one half length of disc, becoming confluent with ridges of disc, not continuous around apex of disc; scutellar plate very slightly raised above disc, the dorsal surface smooth, nearly flat, with apex slightly downturned, shaped as indicated (Fig. 5C); apical pit barely discernible as shallow, elongate-oval depression. Propodeum of usual form with parallel dorsolateral carinae. Forewing with radial cell moderately elongate, open on anterior margin for about $\frac{3}{4}$ of its length (Fig. 5D).

Gaster of normal form, slightly shorter than combined length of head and thorax, petiolar segment not expanded posteriorly, longitudinally ridged; basal hair band of second tergite complete dorsally, several setae wide, the setae erect with apices bent posteriorly, band not woolly in appearance.

A single female specimen labeled "Lanai Mts, Lanai, Hawaii, X-29-1947, N. L.H. Krauss" agrees in all essential details with the holotype. A second female specimen from "Kula Pipe Line, Maui, VIII-25-1929, O.H. Swezey, ex. *Broussaisia*" which was placed as *lanaiensis* by Yoshimoto (1962a), differs in several details, and may not be conspecific.

A male specimen from the British Museum type collection, which bears the following labels, also has been studied: "Lanai(.) 3,000 ft., Perkins. I-1894," "B.M. type Hym 7-17" and "Diranchis rufipes Ashm.(.) ♂ type." This specimen is the male of *Hypodiranchis lanaiensis*, not *D. rufipes* as labeled. It agrees with the female holotype of *lanaiensis* in all essential details, particularly the structure of the thorax, except for the sexually dimorphic characters of the antennae and gaster. The antennae of the specimen are broken, the left with 12 segments remaining, the right with 8. Segments 3 and 4 are subequal in length, and segment 3 is curved with the outer face flattened (Fig. 5E).

Yoshimoto (1962a) placed *lanaiensis* in his genus *Lispothyrsus*. This genus was based primarily on the form of the thorax, which is distinctly less strongly humped than in typical Eucoilidae. However, both species which Yoshimoto assigned to *Lispothyrsus*, as well as one or more undescribed species of this group which I have seen, clearly belong to the endemic Hawaiian *Hypodiranchis* complex. Whether *Lispothyrsus* should be recognized as a separate genus is a problem which requires further study.

IX. *Hexaplasta konensis* Ashmead (Figs. 5F-G).

This species was based upon a single female which is the holotype. The card-mounted specimen bears a collection data label "Kona, Hawaii 2500 ft.(.) Perkins. VI-1892" and additional labels "B.M. Type, Hym., 7-38" and "Hexaplasta konensis Ashm, ♀ type." The specimen has both wings mutilated; the left forewing is broken off before the radial cell and the right wings are broken, folded under the body and stuck together so that the radial cell is not discernible. Ashmead's description states that the radial cell is closed on the margin. The specimen is otherwise intact.

Holotype female; length 1.5 mm. Body very dark brown; legs, including coxae straw yellow; antennae with outer segments brown, basal segments slightly paler.

Head about as wide as thorax, about twice as wide as long in dorsal aspect; length of malar space a trifle less than one-half height of compound eye. Antenna

(Fig. 5F) about $3/5$ as long as body, third segment longest, slightly less than 1.5 times as long as segment 4 (10:7); segment 9 distinctly wider than 8, with outer segments forming a 5-segmented club; these segments with well-defined rhinaria, rhinaria weakly indicated on segments 6–8.

Pronotal plate mostly obscured, posterior and lateral margins distinctly defined by a raised ridge, with 2 or 3 very short longitudinal ridges extending behind the lateral marginal ridge of the plate on each side, posterior margin of plate slightly concave at center. Pronotum and pleurites smooth, shining, metapleurite with a strong longitudinal ridge at level of lower margin of propodeal spiracle which extends $2/3$ distance to anterior margin; metapleural suture complete; posterior margin of metapleurite depressed mesally between strong lower ridge, which protrudes outward on anterior margin of anterioventral hair pocket, and an upper projection formed by apex of the longitudinal ridge below the propodeal spiracle. Tuft of small setae on upper part of mesocoxa apparently present but sparse, longitudinal row of setae on hind margin of hind coxae present. Scutellum moderately strongly raised, rounded and weakly protuberant behind; disc puncto-reticulate laterally and behind, with rather large circular pit-like depressions between ridges; lateral bars well-defined, smooth basally, finely, weakly striate apically. Scutellar plate extending about $5/7$ length of disc, surface smooth, shining, partly covered by transparent glue, nearly flat, slightly arched from front to rear and slightly convex (i.e. slightly higher at center than at sides); margins distinctly overhanging disc posteriorly and laterally, forming a pale, semitransparent rim; shape broadly oval, widest near midlength, with a moderately large circular subapical pit (Fig. 5G).

Gaster slightly shorter than head plus thorax, of normal width, second tergite extending nearly to apex; basal hair ring of second tergite complete dorsally, formed of a single close-set line of erect setae with tips curving posteriorly; a narrow roughened area, bearing scattered, small, fine setae, behind basal ring. Petiolar segment not expanded posteriorly, faintly longitudinally ridged.

The specimen appears to be essentially identical, in all observable features, with the holotype of *Pseudeucoila vulgaris* Yoshimoto (1962). The latter species was based on a specimen from Micronesia, and has been reported from a number of localities in Hawaii (Yoshimoto 1962a).

Hexaplasta konensis clearly belongs in the genus *Ganaspis* Förster as that genus has been redefined by Nördlander (1980, 1982), and the **NEW COMBINATION**, *Ganaspis konensis* (Ashmead), is here proposed for it, with *Pseudeucoila vulgaris* Yoshimoto as a junior synonym, **NEW SYNONYMY**. Dr. Nördlander has informed me, in correspondence, that Yoshimoto's *vulgaris* is a synonym of *Ganaspis xanthopoda* (Ashmead) 1896, which was described from the island of Granada. When this synonymy is formally published, the latter name will have priority over *G. konensis*.

General Comments: Of the nine eucoilid species described by Ashmead in the Fauna Hawaiiensis, eight appear to be endemic Hawaiian forms, and one, *Hexaplasta konensis*, is an introduced species which is probably widely distributed in the tropics. All nine species clearly belong to the *Ganaspis* complex, as that group has been defined by Nördlander (1982).

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